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CDC Interim* Recommendations for Protecting Mail Handlers from Cutaneous and Inhalational Anthrax Associated with Intentional Distribution of *Bacillus anthracis* through the Mail

As of October 24, 2001, the Centers for Disease Control and Prevention (CDC) is aware of five cases of inhalational anthrax among postal workers and mail handlers, including two fatal cases, as well as additional cases of cutaneous anthrax. These cases have been associated with exposure to mail contaminated with *Bacillus anthracis*. This document provides interim recommendations for protecting workers involved in mail sorting, distribution, and handling.

A program to reduce skin or respiratory exposures to *B. anthracis* spores may decrease the risk of anthrax disease in mail handlers. These interim recommendations are based on the limited information available on ways to avoid infection and the effectiveness of various prevention strategies. These recommendations will be updated as new information becomes available.

A hierarchy of measures should be used to control potential exposures to *B. anthracis*. These include, in hierarchical order, engineering controls to capture *B. anthracis* spores at potential points of release, housekeeping measures to reduce the spread of *B. anthracis* spores, and personal protective equipment to prevent worker exposure. The selection of these measures may be made after conducting a site-specific evaluation of the potential risk for *B. anthracis* exposure in each mail-handling facility. These recommendations should be incorporated into a comprehensive safety and health program for protecting mail handlers.

A major source of dust in mail handling facilities occurs during the operation and maintenance of high-speed mail handling machines. The blowdown of these machines in the maintenance operation can aerosolize particles in the size range of *B. anthracis* spores. Pinch roller operations should be evaluated for their potential to force dust-containing spores from envelopes.

The following recommendations are provided for workers potentially exposed to *B. anthracis* spores while handling or processing mail. These recommendations do not address instances where a known exposure has occurred. Mail facilities should develop an emergency plan to contain the hazards; this plan should be put into effect when a known or suspected exposure to *B. anthracis* occurs.

Engineering Controls in Mail Facilities

- Use an industrial vacuum cleaner equipped with a High-Efficiency Particulate Air (HEPA) filter as the first choice for cleaning high-speed mail-sorting equipment. If blowdown/blow-off must be used, first vacuum to remove as much dust as possible.

- Install engineering controls such as HEPA-filtered exhaust hoods for high-speed mail handling equipment and for other areas where dust is generated by processing mail. Local ventilation at pinch roller areas should be specifically considered.
- Install air curtains (using laminar air flow) to isolate areas where large amounts of mail are processed.
- Install HEPA filters in the building's HVAC systems to eliminate re-circulation of aerosolized spores.

Housekeeping Controls

- Avoid dry sweeping and dusting. Use wet cleaning and vacuuming. Use HEPA vacuum cleaners.

Personal Protective Equipment for Workers Handling Mail

Personal protective equipment for workers handling mail must be selected based upon the exposure risk and the type of disease to be prevented (inhalational vs. cutaneous anthrax).

Preventing inhalational anthrax

The engineering control measures described above are the first step toward preventing inhalational anthrax. In addition, respiratory protective equipment may be needed to protect persons working with or near machinery that may generate airborne particles, or at other sites where airborne particles may be generated. Hand-sorting of mail is likely to generate lower levels of airborne particles than machine sorting, but hand-sorting may still present a risk for exposure. To prevent inhalational exposures to *B. anthracis*, respirators to be considered include:

- A NIOSH-approved respirator at least as protective as a half mask respirator equipped with N100, P100, or R100 filters (disposable or elastomeric) should be used by any person who works with or near equipment or machinery known or suspected to generate aerosolized particles (e.g., electronic sorters) if dust levels cannot be or have not yet been adequately controlled by engineering controls. N100, R100, and P100 filters are at least 99.97% efficient at filtering out particles 0.3 microns in size when the respirator is properly fitted. Anthrax spores typically range from 2 to 6 microns in diameter.
- Half-mask respirators with P100 filters must be used in conditions where oil mist from machinery or high humidity is present.
- Fitted N95 respirators can be used by workers sorting mail in other areas, such as workers who hand-sort mail.
- Alternative respirators (such as powered air-purifying respirators with loose-fitting hoods) may be required for workers with facial hair (beards and or large moustaches) because facial hair interferes with the fit of protective respirators.

The need for respiratory protection for workers in other areas should be determined by an on-site risk evaluation.

When respirators are worn, a respiratory protection program that complies with the provisions of OSHA [29 CFR 1910.134] should be in place. This includes medical clearance for wearing a respirator and a respirator

fit-test to ensure that the respirator fits properly. Without fit testing, persons unknowingly may have poor face seals, allowing aerosols to leak around the mask and be inhaled. (See December 11, 1998 *MMWR*, available at <http://www.cdc.gov/mmwr/PDF/wk/mm4748.pdf>).

Workers who cannot be fitted properly with an half-mask respirator based on a fit test may require the use of alternate respirators such as full facepiece negative-pressure respirators equipped with P100 filter respirators, powered air-purifying respirators (PAPRs) equipped with HEPA or supplied-air respirators.

Preventing cutaneous anthrax

- Protective gloves should be available to all workers handling mail (e.g., envelopes, packages). Different gloves or layers of gloves may be needed depending on the task, the dexterity required, and the type of protection needed. Gloves chosen should be appropriate to the task (e.g., leather gloves may be needed for operations where gloves can easily be torn). In some cases, workers may need to wear cotton gloves under impermeable gloves for comfort and to prevent dermatitis. Skin rashes and other dermatological conditions are a potential hazard of wearing gloves.
- Gloves should be provided in a range of sizes to ensure proper fit.
- For workers involved in situations where a gloved hand presents a hazard (e.g., close to moving machine parts), the risk for potential injury resulting from glove use should be measured against the risk for potential exposure to *B. anthracis*.
- The choice of glove material (e.g., nitrile, vinyl) should be based on safety, fit, durability, and comfort. Gloves can be worn under heavier gloves (e.g., leather, heavy cotton) if more protection against hand injury is needed. Latex gloves should be avoided because of the risk of developing skin sensitivity or allergy.
- Sterile gloves (e.g., surgical gloves) are not necessary.
- Care must be taken to avoid touching skin, eyes, or other mucous membranes since contaminated gloves may transfer *B. anthracis* spores to other body sites.
- Gloves should be discarded if they are visibly torn.
- Long-sleeved clothing should be worn to protect exposed skin, and gloves should be pulled over the ends of the sleeves.
- Hands should be thoroughly washed with soap and water when gloves are removed, before eating, and when replacing torn or worn gloves. Soap and water will wash away most spores that may have contacted the skin, and disinfectant solutions are not needed. Do not rely on alcohol-based hand cleaners, as these cleaners will not remove spores as well as soap and water will.
- Used or torn gloves can be discarded in regular trash.

The use of disposable aprons or goggles by persons working with or near equipment or machinery known or suspected to generate aerosolized particles may provide an extra margin of protection. As with gloves, used aprons and goggles can be discarded in regular trash. If a suspicious piece of mail is recognized and handled, the worker's protective gear should be handled as potentially contaminated material (See Guideline For Handwashing And Hospital Environmental Control, 1985, available at <http://www.cdc.gov/ncidod/hip/guide/handwash.htm>).

Mail facility health and safety plans also should consider personal protective needs for maintenance workers who may clean or repair mail sorting machines, and for custodial workers who must clean potential spills.

*These recommendations will be updated as new information becomes available.

The Centers for Disease Control and Prevention (CDC) protects people's health and safety by preventing and controlling diseases and injuries; enhances health decisions by providing credible information on critical health issues; and promotes healthy living through strong partnerships with local, national and international organizations.

DEPARTMENT OF HEALTH AND HUMAN SERVICES